

REMARKS

The Office Action mailed August 23, 2004, has been received and reviewed. Claims 1 through 4 and 6 through 9, and 11 through 15 are currently pending in the application. Claims 1 through 4 and 6 through 15 stand rejected. Applicants have amended claim 9. Claim 10 has been canceled without prejudice or disclaimer and the contents have been incorporated into claim 9. Reconsideration is respectfully requested.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent Re. 33,800 to Fornwalt et al.

Claims 9 through 11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Fornwalt et al. (U.S. Patent Re. 33,800). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicants assert that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claim 9 of the presently claimed invention recites as an element of the claimed invention an “etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid selected from the group consisting of acetic acid, formic acid, and oxalic acid and a fluoride-containing solution, wherein the etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1.” Applicants respectfully assert that Fornwalt fails to identically describe, either expressly or inherently, every element of the presently claimed invention. Specifically, Fornwalt fails to identically describe an organic acid comprising acetic acid, formic acid or oxalic acid. Instead, Fornwalt describes a solution containing hydrochloric acid. Further, Fornwalt fails to describe that the etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1. Applicants respectfully submit that this claim element affects the composition of the claimed etchant

solution and must be given patentable weight.

As Fornwalt fails to identically describe, either expressly or inherently, every element of claim 9 of the presently claimed invention, applicants respectfully submit that claim 9 is allowable.

Claims 11 through 15 are further allowable as depending, either directly or indirectly, from allowable claim 9.

Claim 12 is further allowable as Fornwalt fails to identically describe, either expressly or inherently, that the organic acid comprises glacial acetic acid and the fluoride-containing solution comprises 49% hydrofluoric acid by weight in water. Instead, Fornwalt describes a solution containing hydrochloric acid.

Claim 13 is further allowable as Fornwalt fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 1:1 to about 500:1. Instead, Fornwalt discloses a solution containing hydrochloric acid.

Claim 14 is further allowable as Fornwalt fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 10:1 to about 100:1. Instead, Fornwalt describes a solution containing hydrochloric acid.

Claim 15 is further allowable as Fornwalt fails to identically describe, either expressly or inherently, that the organic acid comprises glacial acetic acid and the fluoride-containing solution comprises 40% ammonium fluoride by weight in water. Instead, Fornwalt discloses a solution containing hydrochloric acid.

Anticipation Rejection Based on U.S. Patent 4,443,933 to de Brebisson

Claims 9 through 11 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by de Brebisson (U.S. Patent 4,443,933). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 9 of the presently claimed invention recites as an element of the claimed invention an "etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid selected from the group consisting of acetic acid, formic acid, and oxalic acid and a fluoride-containing solution, wherein the etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl

orthosilicate between about 27:1 and 55:1.” Applicants respectfully submit that de Brebisson fails to identically describe, either expressly or inherently, every element of the presently claimed invention. Specifically, de Brebisson fails to identically describe the element of the claimed invention directed to etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1. Applicants respectfully submit that this claim element affects the composition of the claimed etchant solution and must be given patentable weight. (See, e.g., Table 1 of the Specification).

As de Brebisson fails to identically describe, either expressly or inherently, every element of claim 9 of the presently claimed invention, applicants respectfully submit that claim 9 is allowable.

Claims 11 through 15 are further allowable as depending, either directly or indirectly, from allowable claim 9.

Claim 12 is further allowable as de Brebisson fails to identically describe, either expressly or inherently, that the organic acid comprises glacial acetic acid and the fluoride-containing solution comprises 49% hydrofluoric acid by weight in water. Instead, de Brebisson describes a solution containing ammonium fluoride.

Claim 13 is further allowable as de Brebisson fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 1:1 to about 500:1. Instead, de Brebisson describes a solution containing ammonium fluoride.

Claim 14 is further allowable as de Brebisson fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 10:1 to about 100:1. Instead, de Brebisson describes a solution containing ammonium fluoride.

Anticipation Rejection Based on U.S. Patent 4,395,304 to Kern et al.

Claims 9 through 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kern et al. (U.S. Patent 4,395,304). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 9 of the presently claimed invention recites as an element of the claimed invention an “etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid selected from the

group consisting of acetic acid, formic acid, and oxalic acid and a fluoride-containing solution, wherein the etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1.” Applicants respectfully submit that Kern fails to identically describe, either expressly or inherently, every element of the presently claimed invention. Specifically, Kern fails to describe an organic acid comprising acetic acid, formic acid or oxalic acid. Instead, Kern describes a solution containing carboxylic acid. Further, Kern fails to identically describe that the etchant solution exhibits a selectivity ratio of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1. Applicants respectfully submit that this claim element affects the composition of the claimed etchant solution and must be given patentable weight.

As Kern fails to identically describe, either expressly or inherently, every element of claim 9 of the presently claimed invention, applicants respectfully submit that claim 9 is allowable.

Claims 11 through 15 are further allowable as depending, either directly or indirectly, from allowable claim 9.

Claim 12 is further allowable as Kern fails to identically describe, either expressly or inherently, that the organic acid comprises glacial acetic acid and the fluoride-containing solution comprises 49% hydrofluoric acid by weight in water. Instead, Kern describes a solution containing carboxylic acid.

Claim 13 is further allowable as Kern fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 1:1 to about 500:1. Instead, Kern discloses a solution containing carboxylic acid.

Claim 14 is further allowable as Kern fails to identically describe, either expressly or inherently, that the acetic acid is in a volumetric ratio with the hydrofluoric acid at about 10:1 to about 100:1. Instead, Kern discloses a solution containing carboxylic acid.

Claim 15 is further allowable as Kern fails to identically describe, either expressly or inherently, that the organic acid comprises glacial acetic acid and the fluoride-containing solution comprises 40% ammonium fluoride by weight in water. Instead, Kern describes a solution containing carboxylic acid.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent 4,395,304 to Kern et al. in view of U.S. Patent 4,721,548 to Morimoto

Claims 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kern et al. (U.S. Patent 4,395,304) in view of Morimoto (U.S. Patent 4,721,548). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The Court of Appeals for the Federal Circuit has stated that “dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.” *In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of independent claim 9, the prior art referenced as rendering dependent claims 13 and 14 obvious, cannot serve as a basis for rejection.

Obviousness Rejection Based on U.S. Patent Re.33,800 to Fornwalt et al. in view of U.S. Patent 4,721,548 to Morimoto

Claims 1 through 3 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fornwalt et al. (U.S. Patent Re. 33,800) in view of Morimoto (U.S. Patent 4,721,548). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 1 of the presently claimed invention recites the claim limitation calling for an “etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid and a fluoride-containing solution

provided in a selected volumetric ratio relative to one another, wherein the selected volumetric ratio of the organic acid to the fluoride-containing solution is about 10:1 to about 500:1.” Applicants respectfully submit that the combination of Fornwalt and Morimoto fails to teach or suggest all the claim limitations of the presently claimed invention to establish a *prima facie* case of obviousness under 35 U.S.C. § 103. As stated by the Examiner, Fornwalt fails to disclose the claimed volume ratio of organic acid and the fluoride-containing solution. However, the combination with Morimoto fails to correct this deficiency. Morimoto discloses a solution of hydrofluoric acid, nitric acid and acetic acid. (Morimoto, col. 3 lines 13-15). As stated in the previous Office Action Response, inclusion of nitric acid in the presently claimed composition would materially change the characteristics of the etchant solution. Because the Morimoto solution includes additional component, Morimoto does not teach or suggest that the same ratio would be successful if the nitric acid were removed. As the combination of Fornwalt and Morimoto fails to teach or suggest all the claim limitations of the presently claimed invention, applicants respectfully submit that claim 1 is allowable.

Claims 2 through 3 and 8 are allowable as depending from allowable claim 1.

Claim 8 is further allowable as the combination fails to teach or suggest that the etchant solution exhibits a selectivity ration of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1.

Obviousness Rejection Based on U.S. Patent 4,395,304 to Kern et al. in view of U.S. Patent 4,721,548 to Morimoto

Claims 1 through 4 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kern et al. (U.S. Patent 4,395,304) in view of Morimoto (U.S. Patent 4,721,548). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 1 of the presently claimed invention recites a claim limitation calling for an “etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid and a fluoride-containing solution provided in a selected volumetric ratio relative to one another, wherein the selected volumetric ratio of the organic acid to the fluoride-containing solution is about 10:1 to about 500:1.” Applicants respectfully submit that the combination of Kern and Morimoto fails to teach or

suggest all the claim limitations of the presently claimed invention to establish a *prima facie* case of obviousness under 35 U.S.C. § 103. As stated by the Examiner, Kern fails to disclose the claimed volume ratio of organic acid and the fluoride-containing solution. However, the combination with Morimoto fails to correct this deficiency. Morimoto discloses a solution of hydrofluoric acid, nitric acid and acetic acid. (Morimoto, col. 3 lines 13-15). As stated in the previous Office Action Response, inclusion of nitric acid in the presently claimed composition would materially change the characteristics of the etchant solution. Because the Morimoto solution includes additional component, Morimoto does not teach or suggest that the same ratio would be successful if the nitric acid were removed. As the combination of Kern and Morimoto fails to teach or suggest all the claim limitations of the presently claimed invention, applicants respectfully submit that claim 1 is allowable.

Claims 2 through 3 and 8 are allowable as depending from allowable claim 1.

Claim 8 is further allowable as the combination fails to teach or suggest that the etchant solution exhibits a selectivity ration of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1.

Obviousness Rejection Based on U.S. Patent 4,443,933 to de Brebisson in view of U.S. Patent 4,721,548 to Morimoto

Claims 1 through 3 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over de Brebisson (U.S. Patent 4,443,933) in view of Morimoto (U.S. Patent 4,721,548). Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 1 of the presently claimed invention recites the claim limitation calling for an “etchant solution which selectively etches borophosphosilicate glass over tetraethyl orthosilicate, the etchant solution consisting essentially of an organic acid and a fluoride-containing solution provided in a selected volumetric ratio relative to one another, wherein the selected volumetric ratio of the organic acid to the fluoride-containing solution is about 10:1 to about 500:1.” Applicants respectfully submit that the combination of de Brebisson and Morimoto fails to teach or suggest all the claim limitations of the presently claimed invention to establish a *prima facie* case of obviousness under 35 U.S.C. § 103. As stated by the Examiner, de Brebisson fails to disclose the claimed volume ratio of organic acid and the fluoride-containing solution. However,

the combination with Morimoto fails to correct this deficiency. Morimoto discloses a solution of hydrofluoric acid, nitric acid and acetic acid. (Morimoto, col. 3 lines 13-15). As stated in the previous Office Action Response, inclusion of nitric acid in the presently claimed composition would materially change the characteristics of the etchant solution. Because the Morimoto solution includes additional component, Morimoto does not teach or suggest that the same ratio would be successful if the nitric acid were removed. As the combination of de Brebisson and Morimoto fails to teach or suggest all the claim limitations of the presently claimed invention, applicants respectfully submit that claim 1 is allowable.

Claims 2 through 3 and 8 are allowable as depending from allowable claim 1.

Claim 8 is further allowable as the combination fails to teach or suggest that the etchant solution exhibits a selectivity ration of borophosphosilicate glass to tetraethyl orthosilicate between about 27:1 and 55:1.

ENTRY OF AMENDMENTS

The amendments to claims above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1 through 4, 6 through 9 and 11 through 15 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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